about 1½ millim. In the middle of the body, its lower half is fully one-third deeper than the upper half. The colourless body exhibits along the dorsal ridge, as also on each side near the intestine, a series of black points, and beneath the chorda five oblique lines of the same colour, corresponding to the commencement of the ventral portions of the muscles.

Total length, 0·088 metre; head, 0·0035; from the tip of the muzzle to the posterior margin of the eye, 0·002; from the anus to the extremity of the tail (without the fin), 0·0033; depth of the middle of the body, 0·013.

Younger specimens, 0·060 metre in length and 0·007 [in depth] present precisely the same structure and proportions, which would furnish a sufficient proof, if such were wanted, that the *Leptocephali* are not mere larval forms of *Cepola* or other Ribbon-fishes. We have had the opportunity of seeing quite young specimens of *Cepola* and other Ribbon-fishes, and have always been able to recognize their genus, notwithstanding the well-known peculiarities of the young state.

Dr. F. Jagor, to whom we are indebted for this beautiful species, took eight specimens of it, of various sizes, in the open sea between Maybate and Luzon.

IX.—*On* Plesiosaurus macropterus, *a new Species from the Lias of Whitby*. By Harry Seeley, F.G.S., Woodwardian Museum, Cambridge.

One of the ornaments of the Woodwardian Museum is a grand Plesiosaur, beautifully displaying the general relations of the bones. It was obtained in 1842 by the energy of the venerable Professor of Anatomy, who, being on the spot when it was found, secured it for the University, when it was purchased by subscription, and confided to the care of the Woodwardian Professor.

The reptile rests nearly flat on the ventral side, in a natural extended posture, the tail only being two or three times bent. But the same hard concretionary limestone which preserves the relations of the bones so well, invests much of the vertebral bodies, so that their relative proportions in form and size are partly obscured.

Hitherto there have been but six species of *Plesiosaurus* described from entire specimens; and with those chiefly our new one will be compared in this brief notice.

The chief characters of the several species, as stated by Professors Owen and Huxley, Mr. Baily and Dr. Carte, are the following:—

1. *P. Cramptoni,* Baily & Carte.

Head one-sixth of skeleton and five-eighths of neck. Vertebræ: 27 cervical, 30 dorsal, caudal 34+. Length 22 feet 5 inches.

2. *P. macrocephalus,* Ow.

Neck equal to two heads. Vertebræ: 29 cervical, 20 dorsal, 2 sacral.

3. *P. brachycephalus,* Ow.

Head one-eighth of skeleton. Vertebræ 75 : 28 cervical. Length $10\frac{1}{2}$ feet.

4. *P. Hawkinsi,* Ow.

Head one-tenth of skeleton. Neck equal to four heads. Tail equal to two and a half heads. Vertebræ 90 to 100: 31 cervical, 23 dorsal, 2 sacral, 35 caudal. Length $7\frac{1}{2}$ feet.

5. *P. Etheridgii,* Huxley.

Head one-twelfth of skeleton. Four lengths of skull equal to anterior 28 cervical vertebræ. Vertebræ 90: 30 cervical, 23 dorsal. Length $7\frac{1}{2}$ feet.

6. *P. dolichodeirus,* Conbr.

Head one-thirteenth. Neck equal to four lengths of head. Vertebræ: 35 cervical, 27 dorsal, 2 sacral, 26 caudal. Length 10 feet.

But if our species is compared with these, it ranges itself at the opposite end of the series to *P. Cramptoni,* having relatively the longest neck and smallest head, as may be here shown.

7. *P. macropterus.*

Head one-twentieth of skeleton, and one-eighth of the neck. Vertebræ: cervical 39, dorsal 24, caudal 28. Length 15 feet 2 inches.

I have also satisfied myself that our species is quite distinct from those which have been made from a few bones.

The orbits, nares, &c. are not to be distinguished; for the skull has been compressed: it is oblong, tapering in a parabola to the front. The teeth are slender, finely striated, curved, and an inch long: they appear to be most numerous in the anterior part of the jaw. The total length of the skull is 9 inches. From the parietal crest to the tip of the premaxillaries is 6 inches. The width of the skull is $4\frac{1}{2}$ inches.

The rami of the lower jaw are massive, $9\frac{1}{2}$ inches long, and $1\frac{1}{4}$ inch deep, and are united by symphysis at their anterior

ends. The breadth of the lower jaw across the condyles of the quadrate bone is $3\frac{1}{2}$ inches.

The length of the cervical part of the vertebral column is 5 feet 10 inches. Its anterior portion is much obscured by the investing matter and a layer of black varnish, which horribly disfigures the whole specimen. Hence the number of cervical vertebræ is not quite clear, though they are not fewer than 39. Near the dorsals they are 2 inches long, wide, with the flattened sides converging above, and only slightly compressed along the whole length till near the articular surfaces, which have sharp margins.

The length of the dorsal and lumbar part of the vertebral column is 4 feet 5 inches, and it contains twenty-four vertebræ. They have large, high, flattened neural spines, which almost touch each other, and large rounded parapophyses separated by interspaces never wider than their own diameter, and often only half of it.

The large rounded ribs in the middle of the back appear to be about 13 or 14 inches long; they are moderately curved, and embrace a width of 17 inches.

There is one vertebra certainly sacral (there may be two). Its whole side seems modified for an articulation. It is 2 inches long.

The tail is 4 feet long, and contains 28 vertebræ, remarkable for very long parapophyses.

Thus the total number of vertebræ is

$$39+24+1+28=92,$$

and the total length is

9 in. + 5 ft. 10 in. + 4 ft. 5 in. + 2 in. + 4 ft. = 15 ft. 2 in.

The pectoral bones are crushed and hidden. The pubes and ischia are obscured in the dislocation of the pelvic region; but the iliac bones are well seen: they are $6\frac{1}{2}$ inches long, expanded and compressed spatulously behind; thick, rounded, and massive at the femoral end, which has a diameter of $2\frac{1}{2}$ inches.

The limbs are very large, and the hinder ones slightly the longer—their total length being, fore limb 3 feet $6\frac{1}{2}$ inches, hind limb 3 feet $10\frac{1}{2}$ inches.

The humerus is flattened, with the distal three-fourths of the anterior border convex, and the proximal three-fourths of the posterior border deeply cupped, the remaining distal part being truncated. It measures, in length, 12 inches; in breadth, at the radial end 9 inches, at the proximal end 4 inches; while the least breadth of the shaft is $2\frac{1}{2}$ inches.

The radius and ulna are both flattened bones; the ulna is slightly reniform, while the radius is constricted below the

middle. The length of the radius is 6 inches; its breadth at both the proximal and distal ends is 4½ inches, the least diameter being 3 inches.

The ulna is 6 inches long and 4 inches wide. The greatest interspace between it and the radius is 1½ inch, while both above and below they touch.

The length of the carpals is 4½ inches: there are three in each row.

The length of the metacarpals and phalanges is 20 inches. There are five rows, and nine bones in each row.

The femur is a smaller bone than the humerus, though larger at the proximal end, which has a great trochanter. Its anterior border is nearly straight, and the posterior border is much less cupped than in the other limb. It is at least 11 inches long, 7½ inches broad at the tibial end, while the proximal end measures in breadth 3½ inches.

The tibia is 5 inches long, and the fibula rather less. At the proximal end the tibia is 4 inches broad; but the fibula is 4½ inches broad: like the ulna, it is reniform.

The length of the tarsals is 4 inches; the length of the metatarsals and phalanges 25 inches; there are nine or ten in each row.

Thus this species, in the small size of the head, and the small proportion it bears to the length of the limbs, of the neck, and of the skeleton, is as well distinguished as by the number of vertebræ in the different regions of the body. It has four more cervicals than *P. dolichodeirus,* but three fewer vertebræ in the back. There are eight more cervicals than in *P. Hawkinsi,* and one more dorsal; one sacral, instead of two; and but twenty-eight caudal vertebræ, instead of thirty-five*.

All Plesiosaur vertebræ have epiphyses which are relatively

* In the Museum of the Yorkshire Philosophical Society is a Plesiosaur with the MS. name *P. homalospondylus.* Its parapophyses begin to get long, and support enormous ribs, at the 40th vertebra, but do not appear to be entirely supported on the neurapophyses till the 44th. The lower cervicals have two articulations for ribs, and are very elongated, some measuring more than 3 inches in length. The lower jaw, which has lost the articular part, measures 9½ inches long. The total length of the specimen is 17 feet 6 inches. Therefore its formula appears to be—

P. homalospondylus.

Head about one-twentieth of skeleton, and one-ninth of the neck. Vertebræ: cervicals 44 ?, dorsals 16 ?, caudals 28. Though nearly resembling our species, and belonging, no doubt, to the same genus, it is readily distinguished. The vertebræ have their margins rounded, and not sharp. The humerus, which measures 12 inches long and 8 inches broad, has the anterior side singularly straight. The femur, which is 12½ inches long and 7½ broad, has the whole anterior border concave.

thick, though generally thickest in the middle and thinning away to the periphery—sometimes dying away before they reach it, and sometimes extending beyond it. They are generally united to the body of the vertebræ.

Nothing in osteology is more curious than the condition of epiphyses in the long bones of Plesiosaurs; for here they are so enormously large as to form nearly the whole of the bone, the shaft being reduced to a mere girdle encircling the ends of the epiphyses. Young specimens of humerus or femur, with the shaft 2 or 3 inches long, have generally lost their epiphyses; and in one beautiful specimen from the Kimmeridge Clay of Cottenham, presented to the University by the Rev. S. Banks, a shaft nearly *three inches in diameter* has lost both epiphyses. It is quite tubular, smooth in the central part, which is perforated for the enormous arteries, and only shows signs of attachment at its thin ends, where the inner surface is rugged. Often, in the Greensand specimens, the epiphysis of the proximal end comes out. The shaft varies much in proportion, with the species.

X.—*On the Systematic Position of the* Strepsiptera.

By Professor Schaum*.

The family of the *Strepsiptera* or *Stylopidæ*, so remarkable in their mode of development, was first regarded as a group of Coleoptera by Burmeister (Handb. der Naturgesch., 1837), and placed by him in the immediate vicinity of the Rhipiphoridous genus *Symbius*, Sundev. (Isis, 1831, tab. 8) = *Rhipidius*, Thunb., which is parasitic upon *Blattæ*. This notion has since been adopted by Newman, Schiödte, and other entomologists, and most recently by Lacordaire, who, in the fifth volume of his 'Genera des Coléoptères,' treats the *Stylopidæ* as a family of Beetles standing in immediate contact with the *Rhipiphoridæ*, and in connexion therewith cites some of the reasons adduced by me in favour of this view, and in opposition to the objections raised against it.

Leconte also, in his recently published work, the 'Classification of the Coleoptera of North America,' has placed the *Stylopidæ* next the *Rhipiphoridæ*, in consideration of their organization and development. In the "Report on the Progress of Entomology in the year 1861" (Wiegmann's Archiv, xxviii. p. 328), Dr. Gerstäcker makes the following remarks in con-

* Translated by W. S. Dallas, F.L.S., from Wiegmann's 'Archiv,' 1864, p. 145.